Before the Federal Communications Commission
Washington, D.C. 20554

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In the Matter of

Revision of Part 15 of the Commission's
Rules Regarding Ultra-Wide Band Docket No. 98-153
Transmission Systems

COMMENT BY INTER-TECH, INC A PRIVATE COMPANY ON THE
DESIRABILITY OF MODIFYING THE RULES
OF PART 15 FOR SPREAD SPECTRUM RADIOS

Sirs,

I am the owner of an Internet Service Provider company here in the heart of Big Sky Country, Lewistown Montana to be precise.

In our small community of 6000 we have one School District that maintains 5 Schools, with a limited budget and a little vision. This District contracted with me to provide a cost effective way to link all the school buildings together so they could communicate with each other and ultimately jump on the Super Highway called the Internet. Lewistown is approximately 100 miles from the nearest upstream Point of Presence (POP) in either Helena or Billings, Montana. And it is surrounded by 10 smaller towns from 5 to 50 miles in distance from Lewistown, the hub of business and government in this rural farming country

The biggest problem we faced in providing connectivity to the net for the schools, public library, businesses, local government, and the corresponding organizations in the 10 smaller towns was not the connection of all the schools to each other but to the upstream the Internet connection POP itself. Because of our Rural location in Montana US West sees fit to charge the highest possible rates for Frame Relay, e.g. A T1 connection runs $1700.00 per month plus the expense of $24.00 per dial up line, and all this paid out monthly something that any rural school district cannot afford. It is a long distance call from Lewistown to any other Internet service

Why even a 56K Frame Relay costs $700.00 per month and how many lines can a 56K frame maintain at a reasonable speed? 10 maximum and this service is not reliable.

We solved Lewistown 's 5 schools interconnection with each other by setting up a Wireless System. Utilizing Wave-Lan Radios Spread Spectrum on the 2.4 GHz frequency, by placing 24Db High Gain parabolic antennas atop 4 school's and one 12 dB Omni with an amplifier attached to it we were able to obtain 1.54 MB data transfer rates over 1.4 miles in distance from Omni to each school. Not bad for a small investment of several thousands of dollars.

The intranet or Wide Area Network works well but then the question came up; how do we get all 5 schools with a minimum of 25 computers to connect to the Internet and at a reasonable cost? Well; we don't. We apply for grant monies and hope we can continue to receive this type of money from now till we can afford a T1 frame at 1700.00 per month and all the necessary equipment to control this bandwidth. We should be able to connect Lewistown 100 miles at T1 speed using spread spectrum technology without recurring, distance related costs as all telephone companies charge. This will require, not only an increase in allowable power - such as 5 watts in rural, low-interference potential areas, but also operations at much lower frequencies to minimize the rigorous line of sight requirements imposed by current Part 15 rules. We understand that the Defense Department is able to achieve long distance spread spectrum connections, so we believe the technology exists to solve our problem which is typical of the Internet connectivity problems all across Rural America. And we are not asking this as some special favor, for we are repeatedly bombarded with statements by the Administration and FCC Commissioners that their goal is connecting up 100 percent of all schools and libraries in America to the Internet. Further, in the 1996 Telecommunications Act which, among other things set up the School, Library Universal Funds, Congress explicitly stated that the principles to be followed were (1)universality (2)technology neutral and (3)competitive. The use of long distance spread spectrum, Part 15 no-license radios, directly addresses that need which US radio manufacturers can readily meet, while the laughable, variable, bureaucratic, inconsistent and we believe, short lived School Library Funding, is not a long term solution.

You see we have a 56K frame provided to us by Mid-Rivers Co-op Telco with money coming from a US West grant paying the cost of the 56K at half the going price (This we believe is a ploy to get the school districts online and dependent on the internet for educational use and then not supply the funds to continue Internet for enhanced education). It's good of the big Telco's to throw us this bandwidth but with over 125 teachers and office clerks using the internet the speeds and access to the internet are poor if not even assessable during school hours. The teacher has to stay after school so she/he can pre-download tomorrows class.

We thank you , for the limited range(FCC Part 15 radios) yet very effective Spread Spectrum Radios for a solution to part of our problem. But there is a clear need for revised FCC rules for the remainder of the problem.

The above details the problems under existing rules getting an affordable connection to Lewistown, which will always be the hub for the surrounding smaller towns.

Hobson, Denton and Stanford, all small communities with populations ranging from 100 to 600 and all scrambling to get connected but running into the BUDGET problem of a reoccurring cost for Frame Relay.

These schools are of the K12 one building school houses, typical of rural Montana.

With a very limited budget. All 3 Districts contacted my company, and asked how could we help not only the school but the local populace get Internet access.

We looked into the cost of Frame Relay and found this to be to costly for the schools , remembering that you not only have the Frame fees but also the line fees paid out every month. The cost were to high even for a private ISP such as myself to invest time and equipment but there was away if we could strategically place a couple of repeaters to hold Spread Spectrum Radios, we could then place a router with dial up access in each community offering FREE internet access to the schools and an alternate provider for the community. (They now have access through their Telco, at low speeds and non-existent service/support).

The dilemma , the Effective range of Spread Spectrum Radios is 12 Miles with out Amplifiers to increase the Gain further, possibly reaching out to 24 miles. Now the nearest town is 24 miles line of sight and 32 to the next town and 34 to the next. We can reach the first with out a repeater, but would still need to utilize all the add on hardware, at a price. We gave each school a cost analysis and bid . It was within their reach.

The schools found the funds to set up this wireless system, after all once the initial cost were put out there would be no reoccurring fees, but what about the towns of Garneil, Fort Benton, Rygate, and all the other smaller towns that have a lower population and are out of the 1 watt of power range mandated by the FCC Par 15. How are they going to afford to "Get connected" When the Telco's wont come down drastically on their Frame Relay cost (Besides not being able to afford the reoccurring cost of Frame Relay).

My company is capable of meeting the connectivity needs of Lewistown, Montana - its schools, library, businesses, government offices, and individual citizens, as well as those of the surrounding smaller towns, at affordable rates to them operating as a small business, using new generations of Part 15 spread spectrum radios enabled by our suggested changes to your FCC Rules. Neither US West nor any rural telephone company can meet those needs today or for the foreseeable future, given their technologies, abhorrence of high-cost rural business, and terrified and non terrified rate structures which are, and ever will be, based upon recurring cost monthly services for just data linkages between rural points - beyond Internet services. Part 15 spread spectrum radios give companies such as mine the opportunity to invest in data radio equipment, providing full Internet services at our POPs, and, while operating profitably, still offer such services, including connectivity services, at a rate, since our point to point connectivity costs can be zero, that is within the reach of all rural entities. While the 'loading up' of connectivity costs with the recurring rates of US West makes it not feasible for us to provide the service we are capable of. And no one else is going to serve the needs of this remote, rural community and those smaller communities dependent upon Lewistown.

The FCC fear of spread spectrum radios necessarily interfering with each other in rural areas - which appears to drive your rulemaking is a bogus issue for the future. We are aware that the degree of interference of spread spectrum radios is a function of the width of bands used by the transmitters and receivers, and the processing gain in their digital signal processors. As your NOI has noted, you have become aware of newer technologies which can permit devices, such as low power radar, to operate in wider bands without unacceptable interference. We contend the same thing is possible for spread spectrum data radios. If you would concentrate more on dictating the minimum standards for non interfering signal traffic, and less on limiting power and frequency range, you would be doing a better public service.

There is another fundamental point. Your Part 15 rules already state that the FCC will not guarantee absence of interference between spread spectrum radios. Its a 'user beware' policy, which works right now in urban areas with radios made under Part 15 rules. If you make rules that permit higher power and lower frequencies with ultra wide bands of operation, for Part 15 for rural areas, then dealing with interference is largely our problem, not yours. Don't underestimate our, or radio manufacturers, capability in dealing with such problems by antenna sighting, smart radio power settings, alternate hopping or direct sequence patterns, as even current radios have clever means for minimizing interference even in constricted spaces. Just as the Commissioners instructed the FCC staff to 'try' the UNII band rules and come back to them if adjustments were found, through actual manufacturing and use experience, you can make far more liberal rules than you now have to meet our needs, and still have the authority to revise your rules later if necessary. But you will never know what can be done in rural areas unless you change the rules to permit what we have requested, because you currently have no 'rural spread spectrum Part 15' radio policies. Its time to be bold, and trust US manufacturing genius to solve what problems come along, rather than being, as Part 15 rules are now, so timid the public need is unmet.

Either the United States Government, through the Federal Communications Commission is willing to put its regulations (Part 15 rules) where its mouth is (calls for universal connectivity to all citizens) or its not. The answer lies right before it, and our contact with radio manufacturers show they are capable and willing to manufacture the devices we need and are willing to pay for as a one-time capital investment, even if that cost is higher than the deceptively low telephone company costs of 'installation' of their recurring-charge services.

The FCC needs to take a real hard look at our Rural Schools and communities, they cannot allow a 1 WATT restriction to continue in Rural America, the heartland of our nation. The Rural communities need the FCC to change their restrictions on Spread Spectrum 902-2.4 GHz frequency Hopping and up the WATTAGE to a reasonable power factor so that even the farthest reaches of America can be connected to the outside world. We cannot have our children, our Educational institutions or the people of our nation step into the 21st century and not be linked to the rest of the world. Is it not much to ask for a change to the FCC Par15 regulations. Will we forfeit education , will we allow the monopolizing TELCOS to continue the raping of rural America?

My company can only do so much for our State and our surrounding School Districts. No one else is. The most cost effective and fastest means available to Central Montana, and rural America is HIGHER WATTAGE and operating bands at lower frequencies for Part 15 Spread Spectrum Radios.

Respectfully yours,

John C. Payne

President

Inter-Tech Inc.

311 W. Janeaux
Lewistown, MT 59457
406-538-7891